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Department of Civil Engineering	
Surveying Lab. I (61223)	
Total Credits	**1**
major compulsory	
Prerequisites	P1 : null (62119) OR Surveying I (61222) P11Synch. : Surveying I (61222)

Course Contents

Students in this course are supposed to apply in the field the principles that are being taught in the theoretical Surveying (1) course (61222). In particular the following subjects will be covered: chain Surveying, leveling, angle measurement and EDM (Distomat) applications (coordinate geometry).

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Conduct field exercises using the various types of traditional surveying equipment and analyze and interpret data (measurements). They should also be able to report the results of measurement in a the form of a map.	B	90 %
2	Work as part of a team.	D	10 %

Textbook and/ or Refrences

Tamim, N.Surveying Lab Manual, An-Najah National University,2013.

Assessment Criteria	Percent (%)
Laboratory Work	60 %
Final Exam	40 %

Course Plan

Week	Topic
1	Introduction, basic map elements and area computation from triangle sides.
2 &3	Surveying of an un-built area using chain surveying: Field work: Introducing the equipment used in chain surveying, measurement of lines (short and long) and making perpendicular lines, surveying of an open un-built area. Office work: Preparation of a plan (map) for the area and computation of its area.
4 &5	Surveying a built-up area using chain surveying: Field work: Draw a sketch for the area on the field book and take all the needed measurements for the boundaries and interior details. Office work: Preparation of a plan (map) for the area and computation of its area using Autocad.
6	Leveling: Field work: Introducing the equipment used in leveling, training on the setup of the level, booking and measuring height differences between points.
7 &8	Profile using the level: Field work: Start work at BM1, take staff readings every 10 m at points located on the centerline of a road and end the work at BM2. Office work: Calculate the reduced levels of all the profile points and check the work accuracy. Draw the profile using the Land Desktop program.
9	Collimation error, Contouring: Field work: Take the measurements required to check the level for the existence of collimation error. Office work: 1. Calculate the collimation error if any. 2. Prepare a contour map from an existing grid.
10 &11	Total-Station: Field work: Training on the setup of the total station + Measuring horizontal and vertical angles, measuring the 3 horizontal angles in a triangle.
12, 13 &14	Surveying and contouring of an area using the total station: Field work: Draw a sketch of the area on the field book and take all the required measurements using the total station. Office work: Compute the coordinates and reduced levels of all the points using Land

	Desktop, and draw a map of all the details including contour lines.
15	Final exam